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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,265	09/19/2003	Thomas J. Hartle	125855-2	6052

23413 7590 04/24/2007  
CANTOR COLBURN, LLP  
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BLOOMFIELD, CT 06002

EXAMINER
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CHEUNG, WILLIAM K

ART UNIT	PAPER NUMBER
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1713

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/667,265	Applicant(s) HARTLE ET AL.	
	Examiner William K. Cheung	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 22-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. In view of the amendment filed February 16, 2007, the objection of claims 22-23, is withdrawn. Claims 1-20, 22-45 are pending.
2. In view of the 103(c) argument filed February 16, 2007, the rejection of Claims 1-20, 22-45 under 35 U.S.C. 103(a) as being unpatentable over Adedeji et al. (US 2001/0031808 A1) in view of Adedeji et al. (US 2002/0137840 A1), is withdrawn.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 11 (line 2-3) recites the limitation "styrene-(ethylene-butylene)-styrene triblock copolymer" is considered indefinite. There is insufficient antecedent basis for this limitation in the claim. It is unclear if the recited "styrene-(ethylene-butylene)-styrene triblock copolymer" can be prepared from the hydrogenation of triblock copolymer comprising styrene and conjugated diene.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 1-6, 8-20, 22-35, 38, 40-42, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobajima et al. (US 4,603,153) in view of Chao et al. (US 5,853,060).

*The invention of claims 1-34 relates to an **under hood component** comprising a reinforced poly(arylene ether)/polyolefin blend and a polyolefin-graft-cyclic anhydride copolymer.*

*The invention of claims 35 relates to an **underhood component** comprising*  
*a poly(arylene ether)/polyolefin blend;*  
*a hydrogenated alkenyl aromatic compound/conjugated diene block copolymer;*  
*a poly(alkenyl aromatic) resin; and*

**a polyolefin-graft-cyclic anhydride copolymer.**

*The invention of claim 36 relates to a radiator end cap comprising:*

**a poly(arylene ether);**

**a poly(alkenyl aromatic) resin;**

**a rubber-modified poly(alkenyl aromatic)resin;**

**a polyolefin;**

**a hydrogenated block copolymer of alkenyl aromatic compound and a conjugated diene;**

**a polyolefin-graft-cyclic anhydride copolymer; and**

**a reinforcing filler.**

*The invention of claim 37 relates to a radiator end cap comprising a reinforced poly(arylene ether)/polyolefin blend and a polyolefin-graft-cyclic anhydride copolymer.*

*The invention of claims 38-41 relates to an under hood component comprising a reinforced poly(arylene ether)/polyolefin blend, wherein the reinforced poly(arylene ether)/polyolefin blend comprises:*

**5 to 40 weight percent of reinforcing filler, based on the total weight of the reinforced poly(arylene ether)/polyolefin blend;**

**0.5 to 5 weight percent of a polyolefin-graft-cyclic anhydride copolymer, based on the total weight of the reinforced poly(arylene ether)/polyolefin blend;**

**a poly(arylene ether)/polyolefin blend; and**

**1 to 10 weight percent of a hydrogenated block copolymer, based on a total combined weight of the poly(arylene ether)/polyolefin blend and the hydrogenated block copolymer,**

**wherein the poly(arylene ether)/polyolefin blend comprises 20 to 50 weight percent poly(arylene**

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*ether) based on the total weight of the poly(arylene ether)/polyolefin blend;*

*20 to 65 weight percent of a poly(alkenyl aromatic) resin, based on a combined weight of poly(arylene ether) and poly(alkenyl aromatic) resin;*

*15 to 70 weight percent of a polyolefin, based on the total weight of the poly(arylene ether)/polyolefin blend.*

*The invention of claim 42-45 relates to a radiator end cap comprising a reinforced poly(arylene ether)/polyolefin blend, wherein the reinforced poly(arylene ether)/polyolefin blend comprises:*

*5 to 40 weight percent of reinforcing filler, based on the total weight of the reinforced poly(arylene ether)/polyolefin blend;*

*0.5 to 5 weight percent of a polyolefin-graft-cyclic anhydride copolymer, based on the total weight of the reinforced poly(arylene ether)/polyolefin blend;*

*a poly(arylene ether)/polyolefin blend; and*

*1 to 10 weight percent of a hydrogenated block copolymer, based on a total combined weight of the poly(arylene ether)/polyolefin blend and the hydrogenated block copolymer, wherein the poly(arylene ether)/polyolefin blend comprises 20 to 50 weight percent poly(arylene ether) based on the total weight of the poly(arylene ether)/polyolefin blend;*

*20 to 65 weight percent of a poly(alkenyl aromatic) resin, based on a combined weight of poly(arylene ether) and poly(alkenyl aromatic) resin;*

*15 to 70 weight percent of a polyolefin, based on the total weight of the poly(arylene ether)/polyolefin blend.*

Sobajima et al. (abstract) disclosed a glass fiber reinforced resin composition a crystalline propylene polymer suitable for interior and/or exterior parts of cars (col. 1, line 36-39). Further, Sobajima et al. (col. 7, line 39-60) disclose that the glass fiber

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reinforced resin composition comprises components (a) to (e), plus other additional ingredients.

<i>Components</i>	<i>Materials</i>	
<i>(a)</i>	<i>Polypropylene, 30-98 parts</i>	<i>Col. 7, line 39-60</i>
<i>(b)</i>	<i>Glass fiber, 2-30 parts</i>	<i>Col. 7, line 39-60</i>
<i>(c)</i>	<i>Ethylene copolymer, 0-35 parts</i>	<i>Col. 7, line 39-60</i>
<i>(d)</i>	<i>Inorganic filler, 0-30 parts</i>	<i>Col. 7, line 39-60</i>
<i>(e)</i>	<i>Pigments, 0-10 parts</i>	<i>Col. 7, line 39-60</i>
	<i>Other polymers: ABS, maleic anhydride grafted polyethylene, styrene-butadiene-styrene block copolymer or its hydrogenated product, polyphenylene oxide</i>	<i>Col. 8, line 46-62</i>
	<i>Other fillers</i>	<i>Col. 8, line 33-45</i>

In view of the substantially identical polymers or components disclosed in the resin composition of Sobajima et al. and the resin composition as claimed, the examiner has a reasonable basis that the resin composition of Sobajima et al. and as claimed are substantially identical even though there may be some differences in the preparative method in the addition order of the components for preparing the disclosed composition and the composition as claimed. Applicants must recognize that the claimed invention is a product, not a process.

Regarding claimed "poly(alkenyl aromatic) resin" of claim 17, "modified polystyrene" of claim 19, "hydrogenated block copolymer" having "55 to 75 or 77 weight

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percent of repeating unit derived from an alkenyl aromatic compound" of claim 40 or 44, Sobajima et al. (Col. 8, line 46-62) clearly disclose styrene-butadiene rubber, styrene butadiene styrene block copolymer or its hydrogenated product, and ABS that would meet the claimed requirement. Regarding the claimed weight percent of the alkenyl aromatic compound, the examiner has a reasonable basis that the weight percent feature is inherently possessed in Sobajima et al. because the taught styrene-butadiene copolymers of Sobajima et al. generically fully encompass the weight percent being claimed because the disclosed copolymers are commercially available polymer products that come in various weight percent, with the butadiene units hydrogenated or unhydrogenated.

Regarding the claimed "polypropylene-graft-maleic anhydride copolymer" of claim 22, 28-30, Sobajima et al. (col. 2, line 34-47) clearly disclose a polypropylene grafted with maleic anhydride.

Regarding the claimed "surface coating" of claim 26, Sobajima et al. (col. 10, line 46-49) clearly the use of sizing agent (which functionally is a surface coating) for the disclosed fillers.

Regarding the claimed "glass fibers having a diameter of about 2 to about 25 micrometers", Sobajima et al. (col. 10, line 42-44) disclose the use of glass fibers having a diameter of 4 microns.



The difference between the invention of claims 1-6, 8-20, 22-35, 38, 40-42, 44 and Sobajima et al. is that Sobajima et al. are silent what type of interior components is considered underhood components in the automotive industries.

Chao et al. (abstract) disclose that an automotive vehicle having a hood covering "an underhood area" in a front portion of the vehicle and a vehicle body defining a vehicle "interior". Therefore, the examiner has a reasonable basis that the claimed "underhood components" are components located in the interior section of an automobile. Motivated by the expectation of success of developing an application for the resin composition of Sobajima et al., it would have been obvious to one of ordinary skill in art to read the definitions of "interior" and "underhood" of Chao et al. into the "interior parts" teachings of Sobajima et al. (abstract) to obtain the invention of claims 1-6, 8-20, 22-35, 38, 40-42, 44.

Regarding the polymer of claim 11, in view of the 112 rejection set forth, the rationale for the rejection of claim 11 is adequate.

7. Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sobajima et al. (US 4,603,153) in view of Chao et al. (US 5,853,060) as evident by Casarini et al. (US 5,358,989).

In view of paragraph 6 of instant office action, the composition taught by Sobajima et al. and Chao et al. is very similar to the composition as claimed.

Although both Sobajima et al. and Chao et al. are silent of a poly(arylene ether) composition comprising a copolymer of 2,6-dimethylphenol and 2,3,6-trimethylphenol, Sobajima et al. (col. 8, line 62) clearly disclose a composition comprising polyphenylene oxide. As evident in Casarini et al. (col. 12, claim 5), the polyphenylene oxide of Sobajima et al. is a class of polymers inherently possesses 2,6-dimethylphenol and 2,3,6-trimethylphenol units.

8. Claims 39, 43, 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sobajima et al. (US 4,603,153) in view of Chao et al. (US 5,853,060), further in view of Li et al. (US 6,060,549).

In view of paragraph 6 of instant office action, the composition taught by Sobajima et al. and Chao et al. is very similar to the composition as claimed.

The difference between the invention of claims 39, 43, 45 and the combined teachings of Sobajima et al. and Chao et al. is that both Sobajima et al. and Chao et al. are silent of a composition comprising homopolystyrene.

Li et al. (col. 12, claim 2) disclose a thermoplastic polymer nanocomposite encompassing a resin composition comprising polystyrene and polyphenyleneoxide. Further, Li et al. (col. 1, line 61-65) clearly disclose the advantages of the disclosed resin composition having the physical and mechanical properties of automotive bumpers. Therefore, motivated by the expectation of success of improving the resin composition as taught in Sobajima et al. and Chao et al. in achieving physical and mechanical properties, it would have been obvious to incorporate the resin composition of Li et al. (which include homopolystyrene) into the resin composition of Sobajima et al. and Chao et al. to obtain the invention of claims 39, 43, 45.

9. Claims 36-37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sobajima et al. (US 4,603,153) in view of Chao et al. (US 5,853,060).

In view of paragraph 6 of instant office action, the composition taught by Sobajima et al. and Chao et al. is very similar to the composition as claimed.

The difference between the invention of claims 36-37 and the combined teachings of Sobajima et al. and Chao et al. is that both Sobajima et al. and Chao et al. are silent of a radiator end cap.

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However, Chao et al. (abstract) clearly disclose that an automotive vehicle having a hood covering "an underhood area" in a front portion of the vehicle and a vehicle body defining a vehicle "interior". Since the claimed "radiator end cap" is located in an area that is considered an "underhood" area, the claimed "radiator end cap" is generically embraced by the "interior parts" teachings of Sobajima et al. Motivated by the expectation of success of developing a car interior application for the resins composition of Sabajima et al., it would have been obvious to one of ordinary skill in art to recognize that a radiator end cap is an car interior parts to obtain the invention of claim 36-37.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



William K. Cheung, Ph. D.

Primary Patent Examiner

April 19, 2007

**WILLIAM K. CHEUNG  
PRIMARY EXAMINER**